

REMARKS

This responds to the Office Action mailed on February 18, 2004. No claims have been amended, canceled, or added. Claims 13-14, 16-27, and 29-44 are now pending in this application.

§103 Rejection of the Claims

Claims 13, 14, 16-27 and 29-44 were rejected under 35 USC § 103(a) as being unpatentable over Tsao et al. (U.S. 6,672,947) in view of Kutlu (U.S. 6,472,762). Applicant respectfully traverses the rejection, and incorporates by reference Applicant's discussion of the February 18, 2004 Office Action.

Regarding claims 13-24, the Final Office Action states

Kutlu, starting at column 3, lines 6-8, discloses 'The die attachment material 108 may be implemented as a high modulus, high glass transition temperature (T_g) adherent (e.g., and epoxy, a metal alloy, etc.) (sic). Because the metal alloy could be used as a die attachment material as mentioned in Kutlu's reference, it is believed that the rejections should be sustained

(Final Office Action at page 3). Applicant respectfully disagrees that Kutlu teaches and enables at least one aspect of what is claimed, namely "attaching said die to the heat spreader by metal to metal diffusion bonding." (*E.G.*, Claim 13). Kutlu does not enable what is claimed. (M.P.E.P. § 2121.01. 8th Ed., Rev. 1).

First, Kutlu's statement is nonsense. A "metal alloy" does not have a "glass transition temperature." That is a characteristic of a plastic. This nonsensical statement therefore only confirms that Kutlu is not in possession of an enabling teaching.

Second, Kutlu's "metal alloy" statement, even if it were clear that he understands that a metal cannot have a glass transition temperature, fails to teach or suggest how "metal to metal diffusion bonding" (*e.g.*, claim 13) is or should be carried out. Applicant on the other hand, teaches a gold-silicon interdiffusion bonding process at pages 8 and 9 and elsewhere in the Detailed Description.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the

knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (M.P.E.P. § 2143 8th Ed, Rev.1).

Claim 13 as amended includes the limitation of “attaching said die to the heat spreader by metal to metal diffusion bonding”. Neither Tsao nor Kutlu teach or suggest this limitation. Because all the claim limitations are not found in the cited references, withdrawal of the rejections is respectfully requested.

Applicant notes that claims 14-16 depend from claim 13 as amended. Because all the claim limitations of these claims are also not found in the cited references, withdrawal of the rejections is respectfully requested.

Regarding the next paragraph in the Final Office Action, the Office Action asserts that “Kutlu, starting at column 2, lines 51-52, discloses a substrate 106 as a build-up layer.” (Final Office Action at page 3). Applicant respectfully disagrees. The scope of Kutlu has nothing to do with the bumpless build-up layer (BBUL, see Detailed Description at page 5 and all the embodiment figures) technology. Indeed, Kutlu teaches his connections a exclusively bumped (see all of Kutlu’s figures). That the Office may construe Kutlu’s substrate 106 (Kutlu at column 2, lines 51-52) as a “build-up layer (Final Office Action at page 3), does not mean that Kutlu teaches what is disclosed and claimed. Withdrawal of the rejections is respectfully requested.

Claim 17 as amended includes the limitation of “forming at least one build-up layer over the die and heat spreader”. Neither Tsao nor Kutlu teach or suggest this limitation. Because all the claim limitations are not found in the cited references, withdrawal of the rejections is respectfully requested.

Applicant notes that claims 18-21 depend from claim 17 as amended. Because all the claim limitations of these claims are also not found in the cited references, withdrawal of the rejections is respectfully requested.

Claim 23 as amended includes the limitation of “forming a metallization layer on said die”. Neither Tsao nor Kutlu teach or suggest this limitation. Because all the claim limitations are not found in the cited references, withdrawal of the rejection is respectfully requested.

Claim 24 includes the limitation, among others, of “singulating said plurality of conjoined microelectronic packages”. Tsao and Kutlu do not teach or suggest singulation as claimed. Because all the claim limitations are not found in the cited references, withdrawal of the rejections is respectfully requested.

Applicant notes that claims 25-27 and 29-31 depend from claim 24. Because all the claim limitations of these claims are also not found in the cited references, withdrawal of the rejections is respectfully requested.

Claim 32 includes the limitation, among others, of “depositing a metallization layer on a back surface of the die”. Tsao and Kutlu do not teach or suggest depositing a metallization layer as claimed. Because all the claim limitations are not found in the cited references, withdrawal of the rejections is respectfully requested.

Applicant notes that claims 33-44 depend from claim 32. Because all the claim limitations of these claims are also not found in the cited references, withdrawal of the rejections is respectfully requested.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, John Greaves at (801) 278-9171, or Applicant's below-named representative at (612) 349-9592 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

CHENG-YI LIU ET AL.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
Attorneys for Intel Corporation
P.O. Box 2938
Minneapolis, Minnesota 55402
(612) 349-9592

Date Aug. 9, 2004

By Ann M. McCrackin
Ann M. McCrackin
Reg. No. 42,858

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 10 day of August, 2004.

KACIA LEE
Name

Kacia Lee
Signature